



Chemical Warfare Agents

REFERENCE AND TRAINING CHART

PREPARED BY U. S. OFFICE OF CIVILIAN DEFENSE, JANUARY, 1943



CLASS	NAME	CWS SYMBOL NICKNAME	METHODS OF DISSEMINATION	PERSISTENCY	ODOR	RELEASED FORM	PHYSIOLOGICAL EFFECT	PROTECTION*	DECONTAMINATION	SELF-AID
VESICANTS	MUSTARD	HS Hot Stuff		3-4 days in open 1 week in woods, several weeks in winter	Garlic, horse- radish, mustard	Dark, oily liquid slowly evaporates	No immediate effect; liquid or vapor burns and blisters skin and lungs; eye irritation		Use bleaching powder alone or mixed with water or earth, hypochlorite solution, green solution† steam, heat, or solvents	<ol style="list-style-type: none">Most injury from gas can be prevented if air raid instruc- tions and certain simple self-aid rules are followed.If exposed to gas: (a) Act promptly and quietly. Be calm. (b) Remain indoors or go indoors, unless official duties require one to stay outside.If exposed to vesicants, speed in treatment is important. (a) If outside and contami- nated, remove outer clothing. (b) Go indoors, remove under- clothing and blot up liquid gas on skin with small piece of cloth. Blot, do not rub. Put clothes in covered can. (c) If eyes are splashed with liquid vesicant and not more than five minutes have elapsed, irrigate eyes with large amounts of 2% baking soda solution (tablespoonful to a quart of water) or with water if soda is not immediately available. (d) If materials are available apply household bleaching solu- tion (sodium hypochlorite) to areas contaminated with mus- tard gas; hydrogen peroxide to lewisite contaminated areas. Bleach is also effective against lewisite.Bathe freely with soap and water, rinse frequently, preferably under shower.Wash nose and throat with baking soda solution.If exposed to lung irri- tants, lie down. Complete rest is essential. Prevent chilling.If exposed to vesicants and lung irritants, or if in doubt, regarding gas to which exposed, perform steps under 3 and 4.Particles of white phos- phorus coming in contact with the skin should be kept covered with water or if available, 2%- 5% copper sulphate (blue vit- riol) solution may be applied, until medical attention is avail- able.Notify air raid warden who will summon necessary medical aid.
	LEWISITE	M-1 Mean One		1 day in open, 2-3 days in woods, 1 week or more in winter	Geraniums	Dark, oily liquid slowly evaporates	Immediately irritates nasal passages; later burns skin and eyes; arsenic poisoning		Water flush or use bleaching powder alone or mixed with water or earth, hypochlorite solution, green solution† steam, heat or solvents	
	ETHYLDI- CHLORARSINE	ED Enemy's Delight		1-2 hours in open, 2-6 hours in woods, longer in winter	Biting, stinging	Clear, oily liquid evaporates at medium rate			Cover with earth; use bleaching powder	
LUNG IRRITANTS	CHLORPICRIN	PS Puking Stuff		1 hour in open, 4 hours in woods, longer in winter	Flypaper, anise	Colorless, oily liquid evaporates rapidly	Lung damage; causes severe coughing, crying, nausea, vomiting		Sodium sulphite solution in alcohol	<ol style="list-style-type: none">If exposed to vesicants, speed in treatment is important. (a) If outside and contami- nated, remove outer clothing. (b) Go indoors, remove under- clothing and blot up liquid gas on skin with small piece of cloth. Blot, do not rub. Put clothes in covered can. (c) If eyes are splashed with liquid vesicant and not more than five minutes have elapsed, irrigate eyes with large amounts of 2% baking soda solution (tablespoonful to a quart of water) or with water if soda is not immediately available. (d) If materials are available apply household bleaching solu- tion (sodium hypochlorite) to areas contaminated with mus- tard gas; hydrogen peroxide to lewisite contaminated areas. Bleach is also effective against lewisite.Bathe freely with soap and water, rinse frequently, preferably under shower.Wash nose and throat with baking soda solution.If exposed to lung irri- tants, lie down. Complete rest is essential. Prevent chilling.If exposed to vesicants and lung irritants, or if in doubt, regarding gas to which exposed, perform steps under 3 and 4.Particles of white phos- phorus coming in contact with the skin should be kept covered with water or if available, 2%- 5% copper sulphate (blue vit- riol) solution may be applied, until medical attention is avail- able.Notify air raid warden who will summon necessary medical aid.
	DIPHOSGENE	DP Di-Phos		30 minutes	Acrid ensilage	Oily liquid evaporates rapidly	Lung damage; causes coughing, lung pains, difficult breathing; highly toxic; eyes water; effects may be delayed		None needed	
	PHOSGENE	CG Choky Gas		1-10 minutes	Musty hay, green corn	Colorless gas			None needed	
	CHLORINE	CL Chlorine		1-5 minutes	Highly pungent like household bleach	Yellow- green gas			None needed	
LACRIMATORS	BROMBENZYL- CYANIDE	CA Cry Always		Several days (weeks in winter)	Sour fruit	Dark, oily liquid slowly evaporates	Eyes smart and close; copious flow of tears; skin irritation; temporary effect headaches		Cover with earth or wash with lime slurry	<ol style="list-style-type: none">If exposed to vesicants, speed in treatment is important. (a) If outside and contami- nated, remove outer clothing. (b) Go indoors, remove under- clothing and blot up liquid gas on skin with small piece of cloth. Blot, do not rub. Put clothes in covered can. (c) If eyes are splashed with liquid vesicant and not more than five minutes have elapsed, irrigate eyes with large amounts of 2% baking soda solution (tablespoonful to a quart of water) or with water if soda is not immediately available. (d) If materials are available apply household bleaching solu- tion (sodium hypochlorite) to areas contaminated with mus- tard gas; hydrogen peroxide to lewisite contaminated areas. Bleach is also effective against lewisite.Bathe freely with soap and water, rinse frequently, preferably under shower.Wash nose and throat with baking soda solution.If exposed to lung irri- tants, lie down. Complete rest is essential. Prevent chilling.If exposed to vesicants and lung irritants, or if in doubt, regarding gas to which exposed, perform steps under 3 and 4.Particles of white phos- phorus coming in contact with the skin should be kept covered with water or if available, 2%- 5% copper sulphate (blue vit- riol) solution may be applied, until medical attention is avail- able.Notify air raid warden who will summon necessary medical aid.
	CHLORACETO- PHENONE	CN Cry Now		While burning	Apple blossoms	Gas or smoke			None needed	
	TEAR GAS SOLUTIONS	CNS or CNB		1 hour in open, 2 hours in woods, longer in winter	Apple blossoms + chloropicrin or + benzol	Liquid, which evaporates			None needed	
IRRITANT SMOKES	ADAMSITE	DM Dirty Mixture		10 minutes	Slight coal smoke or none	Yellow smoke			None needed	<ol style="list-style-type: none">If exposed to vesicants, speed in treatment is important. (a) If outside and contami- nated, remove outer clothing. (b) Go indoors, remove under- clothing and blot up liquid gas on skin with small piece of cloth. Blot, do not rub. Put clothes in covered can. (c) If eyes are splashed with liquid vesicant and not more than five minutes have elapsed, irrigate eyes with large amounts of 2% baking soda solution (tablespoonful to a quart of water) or with water if soda is not immediately available. (d) If materials are available apply household bleaching solu- tion (sodium hypochlorite) to areas contaminated with mus- tard gas; hydrogen peroxide to lewisite contaminated areas. Bleach is also effective against lewisite.Bathe freely with soap and water, rinse frequently, preferably under shower.Wash nose and throat with baking soda solution.If exposed to lung irri- tants, lie down. Complete rest is essential. Prevent chilling.If exposed to vesicants and lung irritants, or if in doubt, regarding gas to which exposed, perform steps under 3 and 4.Particles of white phos- phorus coming in contact with the skin should be kept covered with water or if available, 2%- 5% copper sulphate (blue vit- riol) solution may be applied, until medical attention is avail- able.Notify air raid warden who will summon necessary medical aid.
	DIPHENYL- CHLORARSINE	DA Dopey Ache		10 minutes	None	Fine white smoke	Causes sneezing, nausea, sick depressed feeling, temporary		None needed	
	DIPHENYL- CYANARSINE	CDA		10 minutes	Garlic, bitter almonds	Fine smoke			None needed	
INCENDIARIES	MAGNESIUM	MG		While burning	None	Molten and burning metal		None	Control fires with water; control bombs with water	<ol style="list-style-type: none">If exposed to vesicants, speed in treatment is important. (a) If outside and contami- nated, remove outer clothing. (b) Go indoors, remove under- clothing and blot up liquid gas on skin with small piece of cloth. Blot, do not rub. Put clothes in covered can. (c) If eyes are splashed with liquid vesicant and not more than five minutes have elapsed, irrigate eyes with large amounts of 2% baking soda solution (tablespoonful to a quart of water) or with water if soda is not immediately available. (d) If materials are available apply household bleaching solu- tion (sodium hypochlorite) to areas contaminated with mus- tard gas; hydrogen peroxide to lewisite contaminated areas. Bleach is also effective against lewisite.Bathe freely with soap and water, rinse frequently, preferably under shower.Wash nose and throat with baking soda solution.If exposed to lung irri- tants, lie down. Complete rest is essential. Prevent chilling.If exposed to vesicants and lung irritants, or if in doubt, regarding gas to which exposed, perform steps under 3 and 4.Particles of white phos- phorus coming in contact with the skin should be kept covered with water or if available, 2%- 5% copper sulphate (blue vit- riol) solution may be applied, until medical attention is avail- able.Notify air raid warden who will summon necessary medical aid.
	THERMIT	TH The Heat		While burning	None	Molten iron	Causes severe burns	None	Burns out; cannot be smothered or extin- guished by water; control fires with water	
	THICKENED GASOLINE	None		While burning	Gasoline	Burning particles		None	Control fires	
SCREENING SMOKES	HC MIXTURE	HC Harmless Cloud		While burning	Acrid	Grayish smoke	Harmless	None	None needed	<ol style="list-style-type: none">If exposed to vesicants, speed in treatment is important. (a) If outside and contami- nated, remove outer clothing. (b) Go indoors, remove under- clothing and blot up liquid gas on skin with small piece of cloth. Blot, do not rub. Put clothes in covered can. (c) If eyes are splashed with liquid vesicant and not more than five minutes have elapsed, irrigate eyes with large amounts of 2% baking soda solution (tablespoonful to a quart of water) or with water if soda is not immediately available. (d) If materials are available apply household bleaching solu- tion (sodium hypochlorite) to areas contaminated with mus- tard gas; hydrogen peroxide to lewisite contaminated areas. Bleach is also effective against lewisite.Bathe freely with soap and water, rinse frequently, preferably under shower.Wash nose and throat with baking soda solution.If exposed to lung irri- tants, lie down. Complete rest is essential. Prevent chilling.If exposed to vesicants and lung irritants, or if in doubt, regarding gas to which exposed, perform steps under 3 and 4.Particles of white phos- phorus coming in contact with the skin should be kept covered with water or if available, 2%- 5% copper sulphate (blue vit- riol) solution may be applied, until medical attention is avail- able.Notify air raid warden who will summon necessary medical aid.
	TITANIUM TETRACHLORIDE	FM Floating Mantel		10 minutes	Acrid	Dense white smoke	Harmless	None	None needed	
	SULPHUR TRIOXIDE In Chlorsulphonic Acid	FS Fuming Spray		10 minutes	Acrid	Dense white smoke	Causes prickling of skin; makes eyes water; causes coughing		None needed	
	WHITE PHOSPHORUS ‡	WP White Phos		While burning	Burning matches	Burns in air to a dense white smoke	Smoke is harmless, but burning par- ticles cause very severe burns	None	Burns out; control by immersion in water; keep wet	

KEY



*Gas mask and/or protective clothing needed only by persons whose duties require them to remain in gassed areas.

†Green solution prepared by dissolving 1 lb. bicarbonate of soda in 1 gal. of commercial household bleach solution. Must be freshly prepared when needed.

‡Note three-fold effect of white phosphorus as a (1) screening agent, (2) casualty agent, (3) incendiary.